AMENDMENTS TO THE CLAIMS

This listing replaces all prior versions and listings of claims in this application.

Listing of Claims

1. (Withdrawn) A human artificial chromosome vector comprising a fragment of human chromosome 21 or a fragment of human chromosome 14 from which the distal region of the long arm and/or the distal region of the short arm has been deleted.

2. (Withdrawn) The human artificial chromosome vector according to claim 1, wherein the fragment of human chromosome 21 or the fragment of human chromosome 14 is of about 2-16 Mb.

3. (Withdrawn) The human artificial chromosome vector according to claim 1 or 2, wherein the distal region of the long arm of human chromosome 21 is deleted within the 21q11 region.

4. (Withdrawn) The human artificial chromosome vector according to claim 3, wherein the distal region of the long arm of human chromosome 21 is deleted at AL163204.

5. (Withdrawn) The human artificial chromosome vector according to claim 1 or 2, wherein the distal region of the short arm of human chromosome 21 is deleted within the 21p region.

6. (Withdrawn) The human artificial chromosome vector according to claim 5, wherein the distal region of the short arm of human chromosome 21 is deleted at AL163201.

7. (Withdrawn) The human artificial chromosome vector according to claim 1 or 2, wherein the distal region of the long arm of human chromosome 14 is deleted within the 14q region.

8. (Withdrawn) The human artificial chromosome vector according to claim 7, wherein the distal region of the long arm of human chromosome 14 is deleted at AL157858 or AL512310.

9. (Withdrawn) The human artificial chromosome vector according to claim 1 or 2, wherein the distal region of the short arm of human chromosome 14 is deleted within the 14p region.

10. (Withdrawn) The human artificial chromosome vector according to claim 9, wherein the distal region of the short arm of human chromosome 14 is deleted at at least one position selected from the group consisting of OR4H12, OR4Q4, RNR2, OR4L1, RNU6C, FDPSL3, K12T, C14orf57, OR6S1, M195, OR4K14, MGC27165, LCH, OR10G3, OR4K3, OR4E2, H1RNA, ATP5C2, OR11H6 and OR4M1.

11. (Withdrawn) The human artificial chromosome vector according to any one of claims 1-10, wherein a recognition site for a site-specific recombination enzyme is inserted into the proximal region of the long arm and/or the proximal region of the short arm of human chromosome 21 or human chromosome 14.

12. (Withdrawn) The human artificial chromosome vector according to claim 11, wherein the site-specific recombination enzyme is Cre enzyme.

13. (Withdrawn) The human artificial chromosome vector according to claim 11 or 12, wherein the recognition site for the site-specific recombination enzyme is the loxP sequence.

14. (Withdrawn) The human artificial chromosome vector according to any one of claims 11-13, wherein the recognition site for the site-specific recombination enzyme is inserted into AL163203 in the proximal region of the long arm of human chromosome 21.

15. (Withdrawn) The human artificial chromosome vector according to any one of claims 11-13, wherein the recognition site for the site-specific recombination enzyme is inserted

into a more proximal position than the deletion site of AL157858 or AL512310 in the proximal region of the long arm of human chromosome 14.

16. (Withdrawn) The human artificial chromosome vector according to any one of claims 11-13, wherein the recognition site for the site-specific recombination enzyme is inserted into a more proximal position than the deletion site within the 14p12 region in the proximal region of the short arm of human chromosome 14.

17. (Withdrawn) The human artificial chromosome vector according to any one of claims 1-16, wherein the deletion of the distal region of the long arm and/or the distal region of the short arm is by substitution with an artificial telomere sequence.

18. (Currently Amended) A method for producing a human artificial chromosome vector, comprising the steps of:

(a) obtaining cells that retain human chromosome 21;

(b) deleting a distal region **at AL163204** within the 21q11 region of the long arm and/or a distal region **at AL163201** within the 21p11 region of the short arm of the human chromosome 21; and

(c) inserting a recognition site for a site-specific recombination enzyme into a proximal region of the long arm and/or a proximal region of the short arm of the human chromosome 21, **wherein said vector is mitotically stable when transferred from DT40 cells to CHO cells or human cells**.

19. (Cancelled)

20. (Previously Presented) The method of claim 18, wherein the cells are chicken DT40 cells.

21. (Previously Presented) The method of claim 18, wherein in step (b) the deletion of the distal region within the 21q11 region of the long arm and/or the distal region within the 21p11 region of the short arm is by substitution with an artificial telomere sequence.

22. (Cancelled)

23. (Withdrawn) The method of claim 18, wherein in step (b) the distal region within the 21p11 region of the short arm of human chromosome 21 is deleted.

24.-25. (Cancelled)

26. (Previously Presented) The method of claim 18, wherein in step (c) the site-specific recombination enzyme is Cre enzyme.

27. (Previously Presented) The method of claim 18, wherein in step (c) the recognition site for the site-specific recombination enzyme is the loxP sequence.

28. (Previously Presented) The method of claim 18, wherein the recognition site for the site-specific recombination enzyme is inserted into AL163203 in the proximal region of the long arm of human chromosome 21.

29.-32. (Cancelled)

33. (Previously Presented) The method of claim 18, further comprising the step of:

(d) inserting foreign DNA into human chromosome 21 in the presence of a site-specific recombination enzyme.

34.-36. (Cancelled)

37. (Currently Amended) A method of introducing foreign DNA into a recipient cell, comprising the steps of:

(a) obtaining donor cells that retain human chromosome 21;

(b) deleting a distal region **at AL163204** within the 21q11 region of the long arm and/or a distal region **at AL163201** within the 21p11 region of the short arm of the human chromosome 21;

(c) inserting a recognition site for a site-specific recombination enzyme into a proximal region of the long arm and/or a proximal region of the short arm of the human chromosome 21;

(d) inserting foreign DNA into the human chromosome 21 in the presence of a site-specific recombination enzyme;

(e) preparing microcells from the donor cells that retain the human chromosome 21;

(f) fusing the microcells and recipient cells; and

(g) confirming the introduction of the foreign DNA into the fused recipient cells.

38. (Original) The method of claim 37, wherein the recipient cell is an animal cell.

39. (Original) The method of claim 38, wherein the animal cell is a mammalian cell.

40. (Previously Presented) The method of claim 37, wherein the recipient cell is a pluripotent cell.

41. (Currently Amended) The method of claim 40, wherein the pluripotent cell is ~~an~~ **a mouse** embryonic stem cell (ES cell)~~, or a mesenchymal stem cell or a tissue stem/precursor cell~~.

42. (Currently Amended) A method of producing a cell that expresses foreign DNA, comprising the steps of:

(a) obtaining donor cells that retain human chromosome 21;

(b) deleting a distal region **at AL163204** within the 21q11 region of the long arm and/or a distal region **at AL163201** within the 21p11 region of the short arm of the human chromosome 21;

(c) inserting a recognition site for a site-specific recombination enzyme into a proximal region of the long arm and/or a proximal region of the short arm of the human chromosome 21;

(d) inserting foreign DNA into the human chromosome 21 in the presence of a site-specific recombination enzyme;

(e) preparing microcells from the donor cells that retain the human chromosome 21;

(f) fusing the microcells and recipient cells; and

(g) selecting cells expressing the foreign DNA among the fused recipient cells.

43. (Original) The method of claim 42, wherein the recipient cell is an animal cell.

44. (Original) The method of claim 43, wherein the animal cell is a mammalian cell.

45. (Previously Presented) The method of claim 42, wherein the recipient cell is a pluripotent cell.

46. (Currently Amended) The method of claim 45, wherein the pluripotent cell is ~~an~~ **a mouse** embryonic stem cell (ES cell)~~, or a mesenchymal stem cell or a tissue stem/precursor cell~~.

47.-48. (Canceled)

49. (Previously Presented) A method for producing a human artificial chromosome vector, comprising the steps of:

(a) obtaining cells that retain human chromosome 21;

(b) deleting a distal region of the long arm and/or a distal region of the short arm of the human chromosome 21 to produce a human artificial chromosome vector that does not have a telomere side of AL163204 of the long arm and/or a telomere side of AL163201 of the short arm of the human chromosome 21; and

(c) inserting a recognition site for a site-specific recombination enzyme into a proximal region of the long arm and/or a proximal region of the short arm of the human artificial chromosome vector.

50-51. (Cancelled)

52. (New) A method according to claim 18, wherein said vector is mitotically stable for at least 22 divisions when transferred from DT40 cells to CHO or human cells.